CONGESTION, CAPACITY, CARBON: PRIORITIES FOR NATIONAL INFRASTRUCTURE

Consultation on a National Infrastructure Assessment

**Response from Biofuelwatch**

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Biofuelwatch provides information, advocacy and campaigning in relation to the climate, environmental, human rights and public health impacts of large-scale industrial bioenergy. We are a small team of staff and volunteers based in the UK and US. <http://www.biofuelwatch.org.uk/about/>

1. Biofuelwatch supports a number of conclusions in the **Eliminating carbon emissions from waste and energy** section but would like to provide qualification on others.
2. We support your first priority of improving energy efficiency - on a day when Environmental Industry Commission members say UK business energy efficiency targets "[lack ambition](http://www.eevs.co.uk/media/trendsq317.pdf)" - and the perception that this needs ‘Government intervention’. We would say it should be a core policy priority funded from general taxation. Buildings energy efficiency should be a National Infrastructure Priority in England as it is in Scotland.
3. We agree too that ‘Policies have not been implemented to enable a lowest cost transition. Despite the stability of having a long-term goal, policies have often been subject to sudden change, creating a challenging environment for private investors.’
4. The wrong technologies have been deleted. But where errors have been made the government must have the courage to say so and modify the subsidy regime.
5. Biomass electricity generation has been supported heavily and the Clean Growth Strategy expects a 36% increase in Bioenergy by 2032 including biomass for heavy industry and heat and a near doubling of transport biofuels.
6. A large and growing body of research shows biomass to be as bad for the climate as coal belied by its false carbon neutral status. Your estimation of a 54% carbon reduction in electricity generation is almost certainly an over-estimate due to the uncounted millions of tonnes of CO2 emissions from biomass electricity.
7. The Coal Phase-out published recently allows co-firing of biomass to achieve emissions performance standards. The false zero-carbon status obscures the fact that real emissions may be increased by this. As a world leader in phasing out coal the UK is setting a dangerously bad example which others will follow.
8. This industry is entirely dependent upon subsidy and would not exist without it. In this case this perverse subsidy *should cease.* No more large-scale energy infrastructure based on bioenergy should be built.

**HEAT**

1. We disagree that Nuclear and CCS are part of the solution. The first will swallow investment that should go into energy efficiency to reduce demand. And the second is unfeasible, unscalable, uncommercial, inefficient, insecure, and energy intensive. See Biofuelwatch assessment of CCS as part of its BECCS report. <http://www.biofuelwatch.org.uk/2016/beccs-report-hbf/>
2. You appear to discount (by omission) large-scale roll-out of biomass space heating which we welcome. The vast increase in demand for (largely imported) biomass would be high carbon, environmentally damaging and unacceptably polluting since biomass releases large amounts of particulate pollution.
3. Much of industry thinks de-carbonised gas is crucial for 'keeping the heat on’ for the 20m or so domestic houses equipped with gas central heating, either by using biogas or by switching to Hydrogen, made largely by conversion of natural gas with CCS of the resulting CO2. The latter is an incentive to frack (with attendant environmental risks and permanent methane leakages), and relies on mythical CCS (see below).
4. The sustainability (or lack of it) in Energy from Waste is comprehensively dealt with in the response by our partner organisation, UK Without Incineration Network (UKWIN)’s response, which we endorse.

**ENERGY FROM WASTE**

1. You advocate bio-methane from waste but rightly point out capacity is limited. You also advocate its use as a transport fuel which would further stretch resources.
2. We endorse your warnings about damage caused by to much demand for bio-gas resulting in the use of (food)crop feedstocks. This is already happening. In 2016 the UK put 28,000 tonnes of maize into its biodigesters. The German AD fleet is 90% fed by maize. Maize requires 4-500 ha of maize to support 1 MW of capacity compared with less than 10 ha of solar photovoltaic. AD should only be supported to consume genuine wastes. It should not damage initiatives to reduce food waste.
3. You advocate gasification saying it is ‘proven at small scale’. This is not borne out by the evidence. There is almost no gasification working successfully in the UK and the ground is littered with failed projects. The technology is inefficient, complex and can be dangerous and polluting. See <http://www.biofuelwatch.org.uk/2015/biomass-gasification-and-pyrolysis/>

**CARBON CAPTURE AND STORAGE including BECCS.**

1. Your prefatory phrase “If developed” is key. CCS and by extension BECCS is unfeasible, unscalable, uncommercial, inefficient, insecure, and energy intensive. Bioenergy is high-carbon over a long time scale even if combustion emission could be successfully sequestered. It also has unacceptable impacts on ecosystems (carbon sinks), biodiversity, soils, food prices and security, and air quality. See Biofuelwatch assessment of CCS as part of its BECCS report. <http://www.biofuelwatch.org.uk/2016/beccs-report-hbf/>
2. ‘Negative emissions’, certainly where BECCS is concerned, is wishful thinking and should not be counted on to allow overshoot or continued emissions in area that are more difficult to tackle.
3. The cancellation of the CCS competitions was an uncharacteristically perceptive and wise move by the Cameron government. Is was not working, nor will it.
4. We do not therefore support the investment of government funds in a CCS research or a CCS network.

**Consultation Questions:**

**15) How could existing mechanisms to ensure low carbon electricity is delivered at the lowest cost be improved through:**

* **Being technology neutral as far as possible**

This is not necessarily a good idea. Power stations converting from coal to biomass might still be able to undercut genuinely low carbon technologies and lock the government in to funding high carbon generation until 2027. Conversely ring-fenced funding for Advanced Conversion Technologies (ACT) under CfD pot 2 have funded hugely inefficient, dangerous and polluting technologies that have little prospect of improving.

* **Avoiding the costs of being locked in to excessively long contracts**
* **Treating smaller and larger generators equally**

Large generators tend to be centralised and whatever efficiencies of scale they may enjoy are lost in 10% transition losses and up to 50% process losses when there is no use for the waste heat. We should be favouring decentralised, community-owned energy generation and supply.

* **Participants paying the costs they impose on the system**

This argument is being used to penalise low carbon renewables by getting them to pay the full cost of intermittency. (Much as some delivery companies using freelance drivers force them to pay the full cost of a replacement if they cannot work.) Other 'system costs' such as the cost of pollution and climate change from thermal generation are not paid by the generator. We should be favouring the transition to a genuinely low-carbon, decentralised, renewable energy system by bearing some of the transition costs from government - ideally from general taxation, not a bill-payers' levy. 'Climate change is a result of the greatest market failure the world has seen.' Stern. Thermal generators, especially biomass which avoids the carbon tax, are still not paying for their impacts.

* **Bringing forward the highest value smart grid solutions**

**17) What are the critical decision factors for determining the role of carbon capture and storage in the UK in scenarios where electricity either does, or does not, play a major role in the decarbonisation of heat?**

* whether it will work or not - (unlikely);
* whether it will be cost-effective and therefore commercially scaleable (unlikely without enhanced oil recovery or some sort of re-use resulting in ultimate release of the carbon);
* whether the sequestration is reliable and long term.
* what are the implications of the extra energy required to do the CCS (extra cost, contingent extra emissions and environmental impact and in the case of biomass, damage to ecosystems and carbon sinks. It should be remembered that biomass is high-carbon and unacceptably damaging even if the combustion emissions (greater than coal) can be successfully stored.
* BECCS and ‘negative emissions’ are an excuse for not taking adequate mitigation action now. If we endorse it we endorse overshoot with the very great probability that we will not be able to sequester those emissions at a later date. This is irresponsible policy-making based on a very big ‘if’.

Electrification of heat is the only low-carbon way (apart from all new-build being passivhaus or equivalent and passivhaus retrofit being mainstreamed) of delivering heat. But as you rightly point out ‘it is unlikely that renewables could generate sufficient electricity to meet total demand’. Scaling up electrical heat without a radical retrofit of the UK’s woefully inefficient building stock or without adequate low carbon generation capacity in the pipeline could lock us into high-carbon heat from expensive, centralised, inefficient and probably high-carbon, (if CCS doesn’t work) generation sources.

**What would be the most cost-effective way to bring it forward?**

CCS should not be brought forward. It is a waste of money and locks us in to vast extra supply-side costs which if spent on the demand side, insulating the country's woeful housing stock would increase health and well-being and reduce the need for heat energy permanently.

**18) How should the residual waste stream be separated and sorted amongst anaerobic digestion, energy from waste facilities and alternatives to maximise the benefits to society and minimise the environmental costs?**

UK Without Incineration Network (UKWIN) have supplied a comprehensive answer to this question. We have worked with them extensively over many years including on gasification and other energy from waste technologies. We wholeheartedly support and endorse their response. To their comprehensive data and references we would add our own report on gasification which exposes the unviability of this technology <http://www.biofuelwatch.org.uk/2015/biomass-gasification-and-pyrolysis/>